RANA University
Faculty of Computer Science
IT Department

Course Title	**System Networking**
Lecturer Name	**BAITULLAH MALAKHIL**
Credit Hours	**32**
Lecture Days	**32**
Lecture Timing	**75 MINUTES**
Class No.	**3002**

Course Description

The System Networking course is introduced to equip students with the knowledge of System Administration. We will implement this course using the Microsoft Server 2012 R2 which is the latest version of server in Microsoft platform. This course will include the main contents of Microsoft MCSE course which includes the following topics:

- ✓ AD DS Configuration and Administration
- ✓ AD Backup and Restoration
- ✓ DHCP & DNS Server Configuration and Administration
- ✓ File Server, FTP Server, DFS & Print Server installation and Configurations
- ✓ VPN Configuration …etc.

Course Objective

The main objective of the course is to equip the students with the knowledge of System Administration using Windows Server 2012 R2. By the completion of this course the students will be able to design, configure and troubleshoot a small to medium size network.

Teaching Method

The System Networking subject is 35/65 theoretical and practical subject, the lectures will be taken using the Slides, word document handouts and reference books. Videos of each Lecture will be provided to the students at the end of each class period. Some real life and figure example will be included to make the students understand the main concept. Additionally, two quiz exam, two assignments and a presentation are also considered to be held during the course.

Learning Outcome

By the completion of this course the students will be able to have the concept of system administration and Windows Server 2012 R2. At the end of this course the students will be able to design, configure and troubleshoot a small to medium size network. Students must be able to implement the most common services of Windows Server 2012 R2, which includes the followings:

- ✓ AD DS configuration and troubleshooting
- ✓ User Account management using Windows Power Shell

- ✓ DHCP, DNS & GPO
- ✓ File Server , Print Server , DFS and FTP Server
- ✓ AD Backup and Restoration
- ✓ VPN Configuration
- ✓ Delegation of control
- ✓ RODC configuration

Course Plan

Weeks	Chapters	Teaching Method	Remarks
1	✓ Introduction to the course ✓ Introduction to network & internetwork ✓ Introduction to Server 2012: I. Hardware requirements II. Editions III. New features ✓ Windows Server 2012 R2 Installation	Theoretical/Practical	Homework
2	✓ Introduction to Active Directory ✓ DNS ✓ Domain ✓ Domain Controller ✓ User accounts, Group Accounts & OUs ✓ Local and domain users	Theoretical	**Homework**
3	✓ AD requirements ✓ AD & DNS Installation ✓ Creating AD Objects a. Users b. Groups c. OUs	Practical	**Homework**
4	✓ Joining a client to the domain ✓ Remote Desktop connection ✓ Introduction to Windows Power Shell ✓ Difference between Power Shell & Power Shell ISE ✓ Managing AD objects using Power Shell	Practical	**Homework**
5	✓ Introduction to GPO ✓ Local and domain group policies ✓ Working with the following GPO: a. Prevent Access to control panel b. Deny removable storage c. Desktop wallpaper d. Deny changing desktop wallpaper e. Allow logon locally ✓ Default domain policies ✓ Domain Controllers policies	Practical	**Homework**
6	✓ ***Practical work (Students)*** ✓ Introduction to DHCP ✓ Static and Dynamic IP configuration ✓ Benefits of DHCP	Theoretical/ Practical	**Homework**

	✓ DORA Process & DHCP Scope ✓ DHCP Lease duration ✓ DHCP Reservation ✓ DHCP authorization ✓ DHCP Scope activation ✓ DHCP installation and configuration		
7	✓ Introduction to file server ✓ NTFS Permissions ✓ Shared Level Permissions ✓ Basic data sharing ✓ Mapping Network drive manually ✓ DFS ✓ Mapping Network Drive using GPO ✓ DFS Installation and configuration	Practical	**Homework**
8	✓ ***Practical work (Students)*** ✓ Remote software installation ✓ Software installation using GPO ✓ Print server ✓ Local and network printer ✓ Print server configuration ✓ Printer permissions	Practical	**Homework**
Mid Term Exam (20%)			
9	✓ Introduction to DNS ✓ DNS Components ✓ DNS Namespace ✓ DNS Query a. Recursive query b. Iterative query ✓ DNS forwarders a. Standard forwarder b. Conditional forwarder ✓ DNS cache ✓ DNS Zones a. Forward lookup zone b. Reverse lookup zone ✓ DNS Zone transfer ✓ Other zone types ✓ DNS database (DNS records)	Theoretical	**Homework**
10	✓ DNS Installation ✓ DNS Configuration ✓ Configuration of DNS Forwarders ✓ Creating DNS Zones ✓ ***Practical Work (Students)***	Practical	**Homework**
11	✓ Windows server backup ✓ WBAdmin backup ✓ NTDSUtil backup ✓ Windows server back installation and backing up data and AD database	Theoretical/ Practical	**Homework**

12	✓ AD restoration ✓ Non-Authoritative restoration ✓ Authoritative restoration ✓ USN Number ✓ ***Practical Work (Students)***	Theoretical/Practical	**Homework**
13	✓ Introduction to FTP Server ✓ Installation of FTP Server ✓ Configuration of FTP Server ✓ User account and Password policies ✓ Configuration of user account and password policies ✓ ***Practical work (Students)***	Practical	**Homework**
14	✓ Introduction to VPN ✓ VPN requirements ✓ Remote Access Installation ✓ VPN Configuration ✓ Delegation of control ✓ AD Permissions	Practical	
15	✓ ***Practical Work (Students)*** ✓ Introduction to RODC ✓ RODC application ✓ RODC installation ✓ RODC Configuration	Theoretical/ Practical	
16	✓ Overall review of the lectures ✓ ***QUIZ***	Theoretical	**In accordance with exam schedule**
Reference	C.R. Kothari (2004). Research Method. Quantitative and Statistical Analysis (Methods and Techniques). Second Revised Edition. New Age International Publisher India		

Class Discipline

The students must follow all the rules and regulations of the University and MOHE which include the followings:

- ✓ Students must be present in the class on-time
- ✓ Students must be well dressed
- ✓ Students must have full understanding of previous class
- ✓ The doubts of the students must be cleared if any
- ✓ Homework must be performed on time.

Assessment Method

Many methods are to be used for the assessment and evaluation of the students which :include the followings

- ✓ Evaluation using class feedback orally & practically
- ✓ Evaluation of the homework
- ✓ Evaluation using QUIZ
- ✓ Evaluation using Midterm Examination
- ✓ Evaluation using final examination

Exam Method

Attendance & Class Enrolment:	10% Marks
Quiz:	10% Marks
Midterm Examination:	20% Marks
Final Examination:	60% Marks